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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,976	05/23/2006	Martijn Alexander Van Eijkelenborg	50002/40816	1108

57726 7590 04/14/2008

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EXAMINER	
RADKOWSKI, PETER	

ART UNIT	PAPER NUMBER
2883	

MAIL DATE	DELIVERY MODE
04/14/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/595,976	VAN EIJKELENBORG ET AL.	
	Examiner	Art Unit	
	PETER RADKOWSKI	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) *4 and 10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5-9, and 11-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *5/23/2007* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/17/2006 and 11/29/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Office Action

Comments

1. Claims 4 and 10 have been withdrawn by applicant.

Response to Arguments

2. Applicant's arguments with respect to Claims 1-12 have been considered but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 3, 5, 6, 7, 8, and 11

4. **Claims 1, 2, 3, 5, 6, 7, 8, and 11 are rejected** under 35 U.S.C. 103(a) as being obvious over Vali et al. (5,155,792), in view of Russell et al. (2005/0238301) and further in view of Libori et al. (6,892,018)

From hereinafter, "Vali" will stand-in for "Vali et al.", "Russell" will stand-in for "Russell et al." and "Libori" will stand-in for "Libori et al."

Regarding Claims 1, 2, 3, 5, 6, 7, 8, and 11, Vali teaches a method of producing a microstructured optical fiber [200] from a preform; (See Vali, col. 5., l. 56 – col. 6, l. 64); said method including the steps of: creating zones of relatively high refractive index (denoted as cylindrical tubes or solid rods [235]) at predetermined locations in said preform, said zones substantially surrounded by material (denoted as [P1], interstitial passageways, and [245] channel) of relatively low refractive index to create an array of light guiding cores; (See Vali, fig. 4 and col.5, ll. 56 – 66); subsequently drawing said preform to create a length of said microstructured optical fiber [200]; (See Vali, col. 6., ll. 12-14).

Further regarding Claims 1, 2, 3, 5, 6, 7, 8, and 11, Vali teaches the step wherein said light guiding cores [220] are surrounded substantially by air (cladding layer [230]); in that the ratio of glass to air in the core [220] is made less than the ratio of air to glass in the cladding layer [23]); (See Vali, fig. 4 and col. 6, ll. . 23-25).

Further regarding Claims 1, 2, 3, 5, 6, 7, 8, and 11, Vali teaches the step wherein said light guiding cores have a generally non-circular cross-sectional shape. (See Vali, col. 6, ll. 56 – 62)

Further regarding Claims 1, 2, 3, 5, 6, 7, 8, and 11, Vali teaches a method of producing a microstructured optical fiber [200] from a preform; (See Vali, col. 5., l. 56 – col. 6, l. 64); said method including the steps of: creating channels of relatively low refractive index [245] at predetermined locations in said preform, said channels acting to define light guiding cores [235] ; (See Vali, fig. 4 and col.5, ll. 56 – 66); and subsequently drawing said preform to create a length of said microstructured optical fiber [200]; (See Vali, col. 6., ll. 12-14).

Further regarding Claims 1, 2, 3, 5, 6, 7, 8, and 11, Vali teaches a micro-structured optical fiber [200], said optical fiber including a plurality of air channels [245], said air channels acting to define light guiding cores [235] between said air channels. (See Vali, fig. 4 and col.5, ll. 56 – 66)

Further regarding Claims 1, 2, 3, 5, 6, 7, 8, and 11, Vali does not explicitly teach that the perform is a monolithic preform. However, Russell teaches an optical fiber drawn from a monolithic one-piece preform [750]. (See Vali, figs. 9 and 10) Since Vali and Russell both teach optical fibers drawn from preform, it would have been obvious to one of ordinary skill in the art to modify Vali to have the monolithic configuration taught by Russell because the resultant configuration could be made by drilling holes into a solid block of starting material. (See Russell, par. [0128] One would have been motivated to make this modification because using drilled blocks as the starting configuration will lower production costs while improving product reliability and standardization.

Further regarding Claims 1, 2, 3, 5, 6, 7, 8, and 11, Vali in view of Russell does not explicitly teach that the monolithic preform is a polymeric preform. However, Libori teaches a preform (shown but not labeled) comprising solid polymer [31]. (See Libori, fig. 3; and col. 20, ll. 15-17). Since Vali, Russell, and Libori all teach performs, it would have been obvious to one of ordinary skill in the art to modify Vali in view of Russell to have the polymer taught by Libori because the resultant configuration would enable microstructured polymeric fibers to act as homogeneous materials with a refractive index equal to the effective index of the material. (See Libori, col. 19, ll. 60-67) One would have been motivated to make this modification because the ability to construct microstructured fibers out of either glass or polymeric materials facilitates the design of optical network components.

Claims 7, 8, and 9

5. **Claims 7, 8 and 9 are rejected** under 35 U.S.C. 103(a) as being obvious over Vali et al. (5,155,792), in view of Russell et al. (2005/0238301), further in view of Libori et al. (6,892,018), and further in view of Birks et al. (6,334,019).

From hereinafter, "Birks" will stand-in for "Birks et al."

Regarding Claims 7 and 8, Vali, in view of Russell, and further in view of Libori teaches a drawing method of producing microstructure optical fibers from a preform drilled with holes. (See above.)

Regarding Claim 9, Vali, in view of Russell, and further in view of Libori does not teach two-stage drawing. However, Birks teaches a two-stage drawing method comprising the step wherein a plurality of holes [6] is drilled into a plurality of rods [27] at said predetermined

locations to create said channels; (See Birks, figs. 8a and 8b; and col. 10, ll. 8 – 12); wherein said preform rods [27] are first-stage drawn into canes [28], then said canes are stacked to form a second preform fiber [4], which is then second-stage drawn into a final fiber; (See Birks, fig. 8c and col. 10, ll. 12-19) Since Vali, Russell, Libori, and Birks optical microstructures, it would have been obvious, at the time of the invention, to one of ordinary skill in the art to modify the method of Vali, in view of Russell and further in view of Libori to have the two-stage drawing taught by Birks because the resultant configuration would sustain single-mode high power light transmission. (Birks, Abstract, ll. 11-14) One would have been motivated to make this modification because single modes of propagation may benefit systems in which image transmissions are boosted by periodic amplification.

Claim 12

6. **Claim 12 is rejected** under 35 U.S.C. 103(a) as being obvious over Vali et al. (5,155,792), in view of Russell et al. (2005/0238301), further in view of Libori et al. (6,892,018), and further in view of Hoffmeister et al. (3,567,549).

From hereinafter, "Hoffmeister" will stand-in for "Hoffmeister et al."

Regarding Claim 12, Vali teaches a method of producing a microstructured optical fiber [200] from a preform; (See Vali, col. 5., l. 56 – col. 6, l. 64); said method including the steps of: creating zones of relatively high refractive index (denoted as cylindrical tubes or solid rods [235]) at predetermined locations in said preform, said zones substantially surrounded by material (denoted as [P1], interstitial passageways, and [245] channel) of relatively low refractive index to create an array of light guiding cores; (See Vali, fig. 4 and col.5, ll. 56 – 66);

subsequently drawing said preform to create a length of said microstructured optical fiber [200]; (See Vali, col. 6., ll. 12-14).

Further regarding Claim 12, Vali teaches the step wherein said light guiding cores [220] are surrounded substantially by air (cladding layer [230]); in that the ratio of glass to air in the core [220] is made less than the ratio of air to glass in the cladding layer [23]); (See Vali, fig. 4 and col. 6, ll. . 23-25).

Further regarding Claim 12, Vali teaches the step wherein said light guiding cores have a generally non-circular cross-sectional shape. (See Vali, col. 6, ll. 56 – 62)

Further regarding Claim 12, Vali teaches a method of producing a microstructured optical fiber [200] from a preform; (See Vali, col. 5., l. 56 – col. 6, l. 64); said method including the steps of: creating channels of relatively low refractive index [245] at predetermined locations in said preform, said channels acting to define light guiding cores [235] ; (See Vali, fig. 4 and col.5, ll. 56 – 66); and subsequently drawing said preform to create a length of said microstructured optical fiber [200]; (See Vali, col. 6., ll. 12-14).

Further regarding Claim 12, Vali teaches a micro-structured optical fiber [200], said optical fiber including a plurality of air channels [245], said air channels acting to define light guiding cores [235] between said air channels. (See Vali, fig. 4 and col.5, ll. 56 – 66)

Further regarding Claim 12, Vali does not explicitly teach that the perform is a monolithic preform. However, Russell teaches an optical fiber drawn from a monolithic one-piece preform [750]. (See Vali, figs. 9 and 10) Since Vali and Russell both teach optical fibers drawn from preform, it would have been obvious to one of ordinary skill in the art to modify Vali to have the monolithic configuration taught by Russell because the resultant configuration

could be made by drilling holes into a solid block of starting material. (See Russell, par. [0128] One would have been motivated to make this modification because using drilled blocks as the starting configuration will lower production costs while improving product reliability and standardization.

Further regarding Claim 12, Vali in view of Russell does not explicitly teach that the monolithic preform is a polymeric preform. However, Libori teaches a preform (shown but not labeled) comprising solid polymer [31]. (See Libori, fig. 3; and col. 20, ll. 15-17). Since Vali, Russell, and Libori all teach performs, it would have been obvious to one of ordinary skill in the art to modify Vali in view of Russell to have the polymer taught by Libori because the resultant configuration would enable microstructured polymeric fibers to act as homogeneous materials with a refractive index equal to the effective index of the material. (See Libori, col. 19, ll. 60-67) One would have been motivated to make this modification because the ability to construct microstructured fibers out of either glass or polymeric materials facilitates the design of optical network components.

Further regarding Claim 12, Vali, in view of Russell, and further in view of Libori does an optical fiber for imaging applications. However, Hoffmeister teaches an optical fiber for imaging applications comprising light-guiding cores. (See Hoffmeister, fig. 2, and col. 1, ll. 29 – 41) Since Vali, Russell, Libori, and Hoffmeister all teach optical transmission devices, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Vali, in view of Russell, and further in view of Libori to have the optical imaging capability taught by Hoffmeister because the resultant configuration would permit the production of flexible image-transmitting devices. (See Hoffmeister, col. 1, ll. 63-66) One would have been motivated to

make this modification because the ability to flexibly manipulate light-imaging devices facilitates the fabrication, modification, repair and operation of optical communication and display apparatus.

Conclusion

7. The prior art made of record in Form 892 and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Radkowski whose telephone number is (571) 270-1613. The examiner can normally be reached on Monday - Thursday, 8 AM to 5 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font, can be reached on (517) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, See http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call (800) 786-9199 (IN USA OR CANADA) or (571) 272-1000.

/Peter P. Radkowski/ 4/12/2008 /James P. Hughes/

Primary Examiner, Art Unit 2883